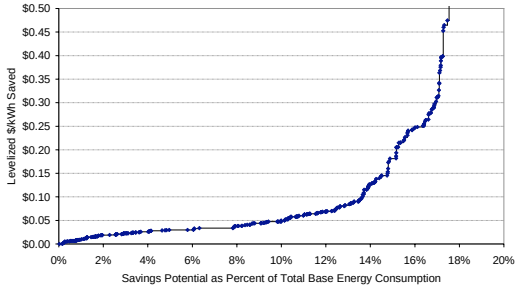
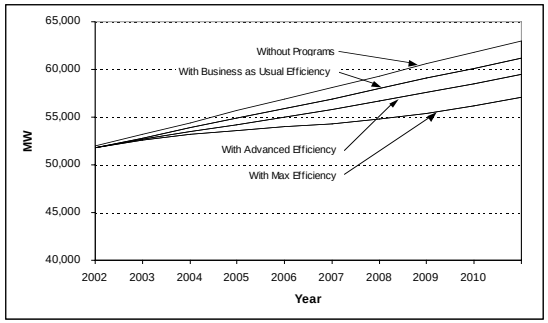
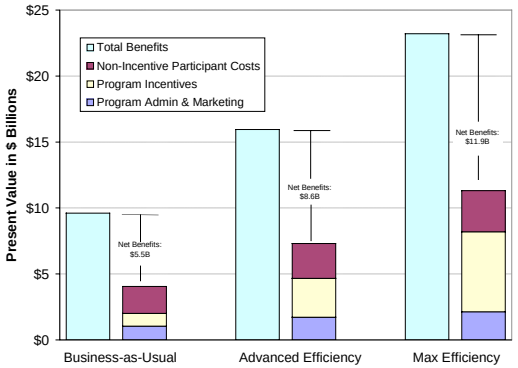


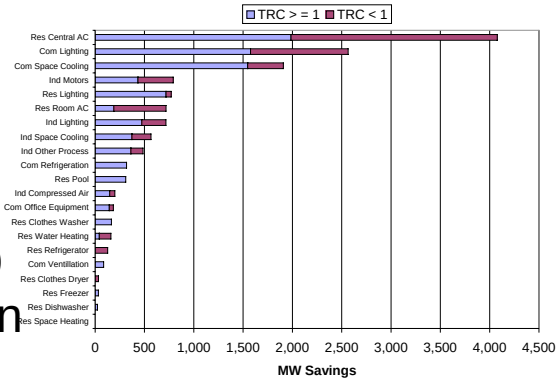


A Few Thoughts on EE Potential Studies



Mike Rufo
Panel 2 Presentation

2007 IEPR Committee Workshop
Assembly Bill 2021 Implementation



April 20, 2007

Breakdown of Recent CA Studies

- 2000-2001: PG&E/SCE/SDG&E commercial and residential sectors (KEMA-XENERGY)
- 2001-2002: CEC and Energy Foundation leverage IOU work in KEMA-XENERGY's *Secret Surplus* Study
- 2004-2006 Itron update study for IOUs (CEC & CPUC participate on PAC); KEMA updates industrial
- 2005-2006 Itron & KEMA supplement runs for IOUs
- 2006-2007 Itron updating study for IOUs (CEC & CPUC participating on PAC)
- 2007 CPUC Goals Study
- 2006-2007 CEC (PIER) Long-term EE Scenarios
- Muni studies: LADWP (2005-2006), SMUD (2006-2007), TID (2007), multi-muni (2007)

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Knowledge to Shape Your Future

A Few Study Scope Issues

- Sectors, vintage, end uses, measures
- Currently available measures, emerging, both?
  - Hardware, practices, both?
- Efficiency, behavior, both?
- Constant/non-constant energy service levels?
- Base load forecasting – all load or targeted loads?
  - Constant/non-constant service levels?
- Time horizon – 1 year, 5 year, 10 year, 20 year, 50 year?
- Market saturation data or extrapolated prototypes?
- Calibrated baseline data?
- Avoided cost elements
  - Cost effective compared to what?
- Changes in barriers and/or cost/savings over time?
- Stock accounting and adoption modeling
- Expected value, optimistic, or conservative orientation/bias?

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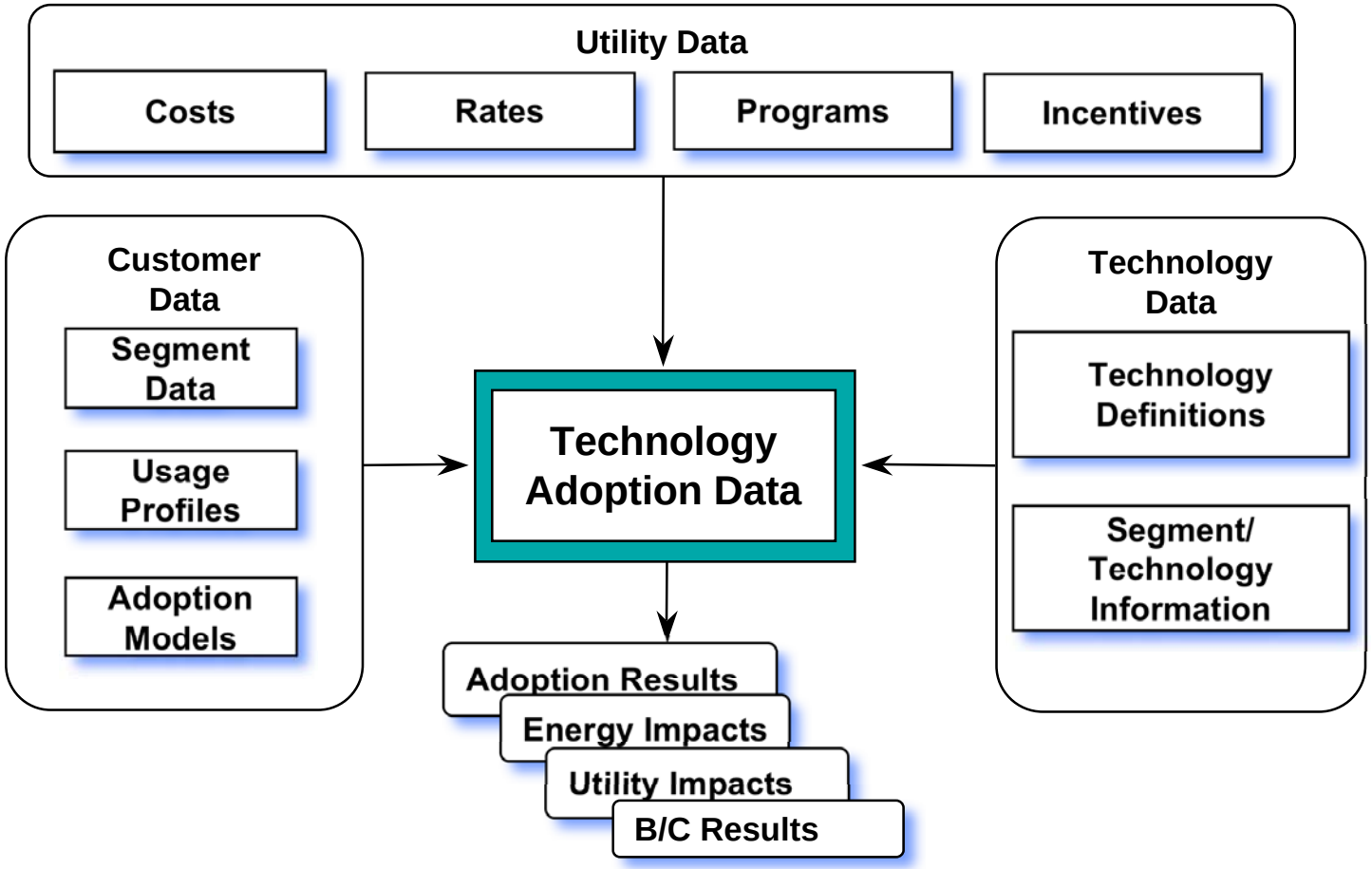
Knowledge to Shape Your Future

ASSET Bottom Up Framework



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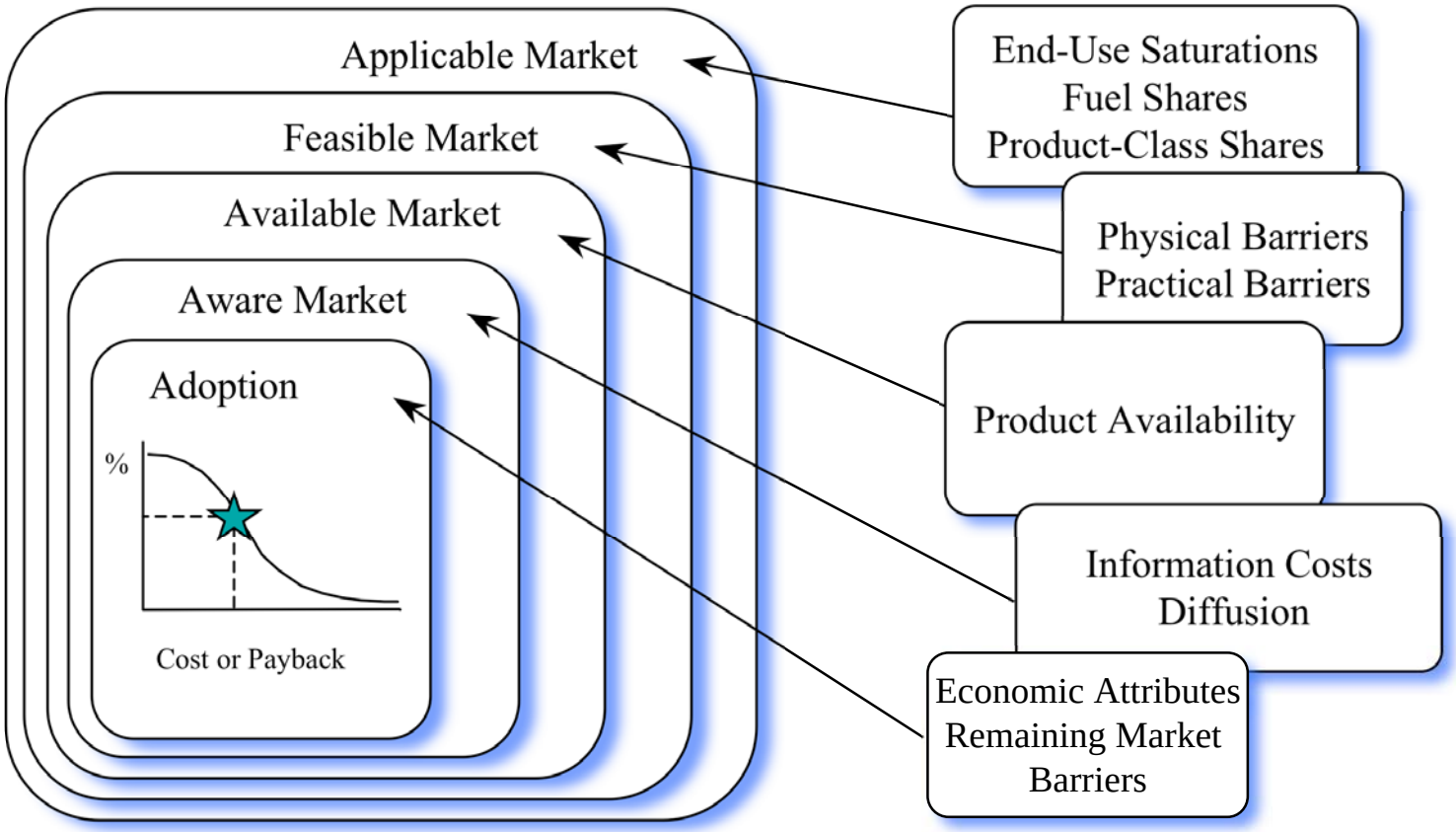
Technology Adoption Modeling Concepts



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Summary of Strengths and Weaknesses

- Strengths:
  - Use of saturation data
  - Use of stock accounting
  - Organizational framework
  - Calibration to program and market accomplishments
  - Tracking of savings over time
  - Estimation of technical and economic potential
  - Ability to efficiently handle multiple scenarios
- Weaknesses:
  - Lack of data
  - Quality of data
  - Challenges associated with:
    - Measure interactions
    - Effect of economic vs. non-economic factors
    - Program and naturally-occurring adoption
    - Market effects over time
    - Out-of-sample programs
  - Data intensiveness often leads to false precision
  - Focus on point estimates, limited presentation of uncertainty

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Some Concerns

- Tendency to want “the” answer “now”
- But there is no single answer to questions regarding future adoption behavior
- Work needs to be framed more within constructs of scenario analysis
- Current energy and EE industry research poorly supports baseline and potential studies
- Lack of formal cross-organization collaboration/ multi-client studies

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Many Needs…

- Improve saturation data
- Improve data on marketing/info effectiveness
  - What are marketing effectiveness rates?
- Improve data on adoption (revealed preference)
  - What ever happened to experimental designs!
- Improve tracking of efficiency accomplishments
- Improve analysis of integrated design and practices
- Continue to reduce aggregation bias
- Improve characterization of uncertainty/use scenarios
- Increase understanding of what are empirical versus judgment-based inputs and results
- Develop simpler tools to support policy-making and input from key decision makers

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Questions?